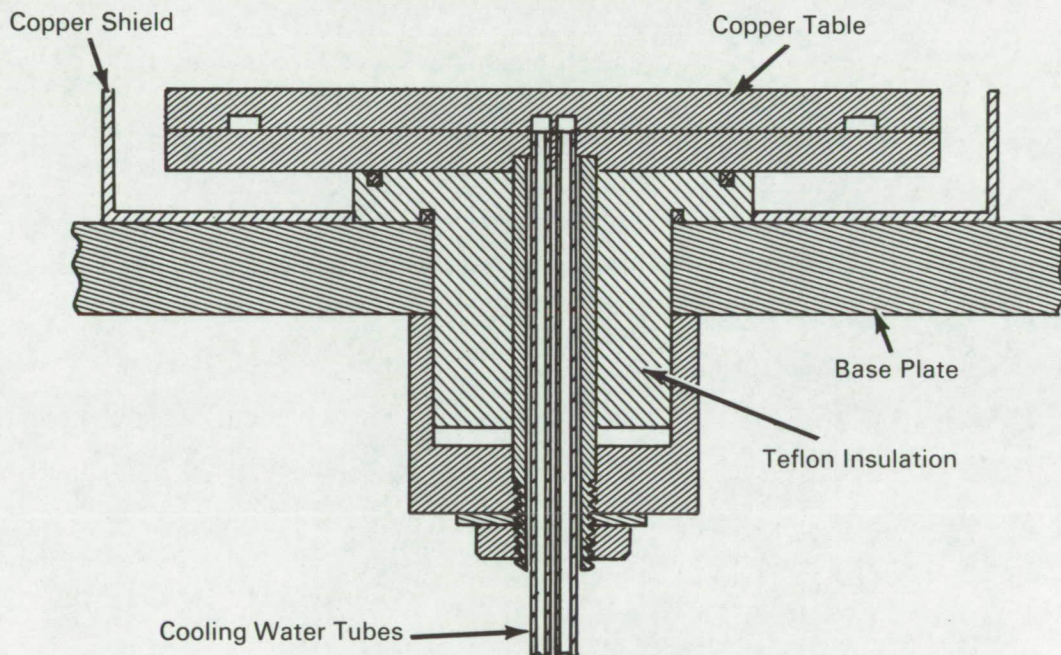


NASA TECH BRIEF



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Process Reduces Secondary Resonant Emission in Electronic Components



The problem:

The requirement to significantly increase the power output of transmitters used on interplanetary probes has stimulated research into methods of reducing secondary electron emission (multipaction) in coaxial connectors and in waveguides. Unpressurized rf systems are desirable because equipment is less complex and lighter in weight and because of the danger of pressure loss that can result in system failure where such a system of multipaction prevention is used. The technique of coating with titanium reduces multipaction in vacuum but does not appreciably affect it after exposure to the atmosphere.

The solution:

After the assembly to be treated has been cleaned of all contaminants, it is placed in a vacuum chamber and the negative lead of a high voltage supply (nominally 5 kv) is applied to the assembly while the positive lead is applied to ground. The chamber is now evacuated to approximately 10^{-6} torr and argon gas is introduced into the chamber until the assembly glows evenly. The argon feed is terminated and a hydrocarbon gas such as methane is introduced which disassociates in the discharge to form a thin carbon film causing the glow to disappear after about one minute, at which time the high voltage is removed and the chamber is vented to the atmosphere.

(continued overleaf)

Notes:

1. Apparatus required for this process is standard except for the water cooled etching table whose teflon insulated bearing permits the high voltage application.
2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91103
Reference: B66-10685

Patent status:

No patent action is contemplated by NASA.

Source: H. Erpenbach
(JPL-934)